GARMIN

GMR 18/24

marine radar

installation instructions

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Introduction

Thank you for choosing the Garmin GMR 18/24. The GMR 18/24 utilizes the performance of Garmin radar and provides overlay and color information when combined with a Garmin marine network chartplotter.

Product Registration

Help us better support you by completing our online registration today! Connect to our Web site at http://my.garmin.com. Keep the original sales receipt, or a photocopy, in a safe place.

Contact Garmin

Contact Garmin if you have any questions while using your GMR 18/24. In the USA contact Garmin Product Support by phone: (913) 397-8200 or (800) 800-1020, Monday–Friday, 8 AM–5 PM Central Time; or go to www.garmin.com/support/.

In Europe, contact Garmin (Europe) Ltd. at +44 (0) 870.8501241 (outside the UK) or 0808 2380000 (within the UK).

NOTE: The Garmin GMR 18/24 has no user-serviceable parts. If you encounter a problem with your unit, please take it to an authorized Garmin NMEA dealer or contact Garmin Product Support for repairs.

Packing List

Before installing and getting started with your unit, check that your package includes the following items. **If any parts are missing, please contact your Garmin dealer immediately.**

Standard Package:

- GMR 18/24 radar unit
- Power cable
- Marine network cable
- Field install RJ-45 network cable connector
- Mounting kit hardware
- Mounting template
- Grommet for marine cable

Scanner Installation

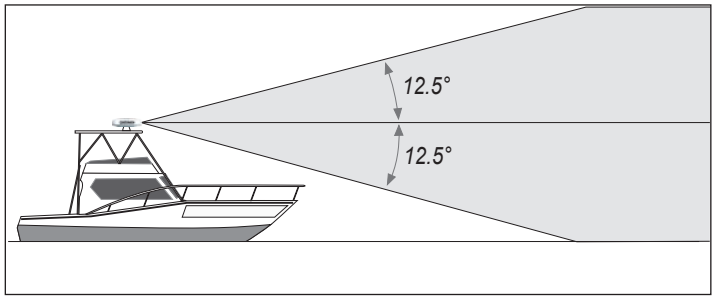
The following section covers the installation and setup of the GMR 18/24 marine radar. The GMR 18/24 only operates with Garmin chartplotters through a Garmin marine network. See your Garmin dealer or the Garmin Web site for more details.

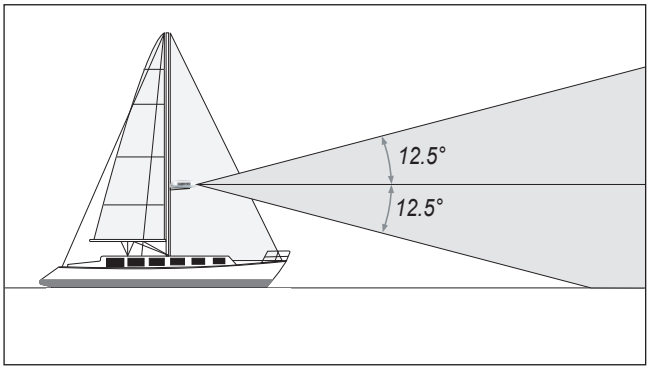
To complete the installation, you need the appropriate fasteners, tools, and mounts. These items should be available at most marine dealers. Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding. When drilling or cutting, always check first to see what is on the other side of the surface. If you experience difficulty with the installation, contact Garmin Product Support or seek the assistance of a professional installer.

Installation Guidelines

To maximize the performance of the radar, observe the following installation guidelines:

- An ideal scanner mounting location is high above the ship's keel line with a minimal part of the vessel's structure or rigging blocking the radar beam. Obstructions in the path of the radar beam may cause blind and shadow sectors, or generate false echoes. The higher the installation position, the further the scanner can detect targets.
- Avoid mounting the scanner on the same level as smoke stacks, horizontal spreaders, or crosstrees on a mast. Do not install the scanner near heat sources where it may be subjected to smoke or hot air from smoke stacks or heat from lights.
- The mounting surface or platform should be sturdy enough to support the weight of the scanner (GMR 18 = 7.17 kg/15.8 lbs, GMR 24 = 9.12 kg /20.1 lbs), as flat as possible, and parallel with the vessel's water line.
- It is recommended that the radar scanner be mounted out of range of personnel (horizontal beam width above head height). When the scanner is transmitting, do not look directly at the antenna at close range; eyes are the most sensitive part of the body to electromagnetic energy. When properly installed and operated, the use of this radar conforms to the requirements of ANSI/IEEE C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields.
- A "Compass Safe Distance" must be maintained between a compass and the scanner. The Compass Safe Distance is measured from the center point of the compass to the nearest point on the scanner.
- Standard compass = 1 m (39 3/8")
- Standby Steering and Emergency compasses = 0.5 m (19 3/4")





- Mount other electronics and cables more than 2 m (78 3/4") from the path of a radar beam. A radar beam can normally be assumed to spread 25° vertically above and below the scanner's radiating element. For vessels with higher bow angles at cruise speed, it may be helpful to lower the angle so the beam points slightly downward to the waterline while at rest. Shims may be used as necessary.
- Install the scanner away from antennas or other electronics. GPS antennas should be either above or below the radar beam path of the scanner. Mount at least 1 m (39 3/8") from any equipment transmitting or cables carrying radio signals, such as VHF radios, cables, and antennas. In the case of Single Side Band SSB radios, the distance should be increased to 2 m (78 3/4"). IEC 60936-1, clause 3-27.1, states maximum distances from the antenna at which RF (radio frequency) levels can be expected.

  (100W/m squared = 121.92 cm [48"]) (10W/m squared = 274.32 cm [108"])
- The radar scanner transmits electromagnetic energy. It is important that the radar is turned off or the DC power input is disconnected when personnel are required to come close to the scanner to perform work on the scanner assembly or associated equipment.

Installation Procedures

The following order of mounting the scanner and attaching the power and network cables may vary depending on the installation location and mount used.

Mounting the Scanner

1. When a suitable mounting location is determined, verify that the mounting hole locations are aligned fore and aft, and use the included mounting template or reference Figure 1 to drill four 9.5 mm ($^3/_8$") mounting holes. (This step is not necessary if you are using a pre-drilled Garmin compatible or Raymarine® mount.)
2. Align the notch and locking ring on the power cable to the power connector. Press the 2-pin power cable to the power connector and the RJ-45 marine network cable to the RJ-45 socket (Figure 2). Turn the power cable locking ring clockwise until it stops. Tighten the RJ-45 locking ring clockwise until it is firmly sealed.
3. The power and network cables may be pressed into any of the five guide grooves molded into the bottom of the scanner case and secured under the cable hold-down plate (Figure 2). Avoid excessive bending or twisting of the cables. See the following "Cable Runs" section for more information.
4. Position the scanner on the mounting surface with the triangular mark on the case aligned to the front of the vessel. Apply a bead of marine sealant around each of the mounting holes on the mounting surface.
5. Install the four (4) M8 x 1.25 x 60 threaded rods into the Mounting Holes on the bottom of the scanner. There should be no more than 50 mm (2") extruding from the scanner when they are installed properly.
6. Fasten the scanner to the mounting surface using the M8 x 1.25 x 60 threaded rods (installed in the previous step), spring washers, flat washers, and M8 Hex nuts as shown in Figure 3. **The nuts should be torqued to between 13.7-18.6 N-m (10-14 lb ft).**

NOTE: The supplied M8 x 1.25 x 60 threaded rods can be used on mounting thicknesses of 5-30 mm ($^3/_{16}$" - 1 $^3/_{16}$") (recommended). For surfaces over 30 mm (1 $^3/_{16}$"), locally supplied longer threaded rods are needed.

Distance	Gauge
2 meters (6 $^1/_2$ ft)	*16 AWG*
4 meters (13 ft)	*14 AWG*
6 meters (19 ft)	*12 AWG*

Wire Gauge Table

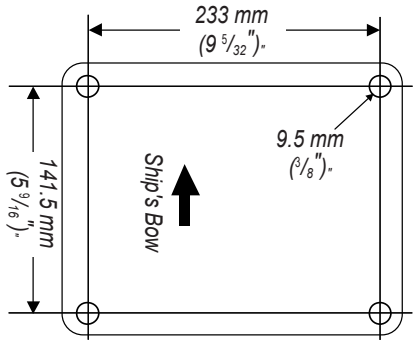


Figure 1

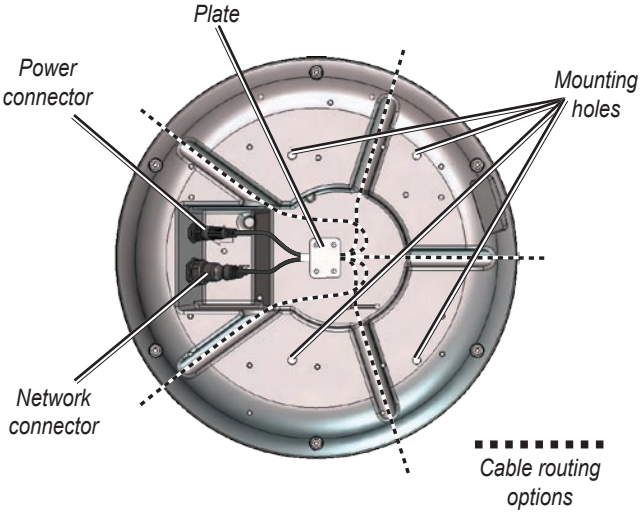


Figure 2

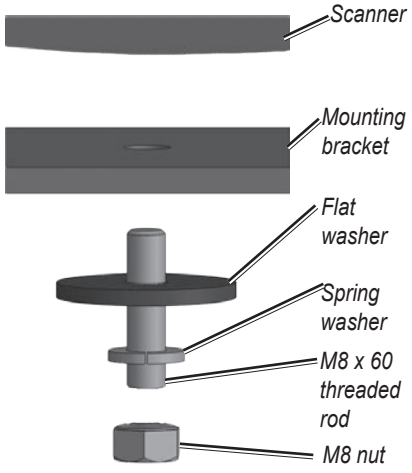


Figure 3

Cable Runs

Route the cables as needed, depending on the type of mount you are using. It may be necessary to drill 31.7 mm (1.25") holes for routing the power or network cable. Garmin provides a rubber cable grommet which may be used to cover a cable installation hole. The grommet does NOT provide a waterproof seal. To waterproof the grommet, apply a marine sealant. Additional cable grommets can be purchased through Garmin or a Garmin dealer.

When installing the power and network cables, observe the following:

- It is not recommended to cut the RJ-45 marine network cable, but the GMR 18/24 package includes a field install kit if it is necessary to do so. Make sure you save the end you cut. It is important that the wires are connected to the new RJ-45 connector the same way.
- To ensure safety, use the appropriate tie-wraps, fasteners, and sealant to secure the cable along a route and through any bulkhead or deck. Avoid running the cables near moving objects, high-heat sources, or through doorways and bilges.
- Avoid installing the cables next to or parallel to other cables, such as radio antenna lines or power cables. This is essential to avoid interference to or from other equipment. If this is not possible, shield the cables with metal conduit or a form of EMI shielding.
- Install the power cable as close to the battery source as possible. A minimum of 10.5 VDC is required during radar turn-on and operation. Reference the wire gauge table on the previous page when using extended runs of wire between the power cable and the battery.

Final Wiring Connections

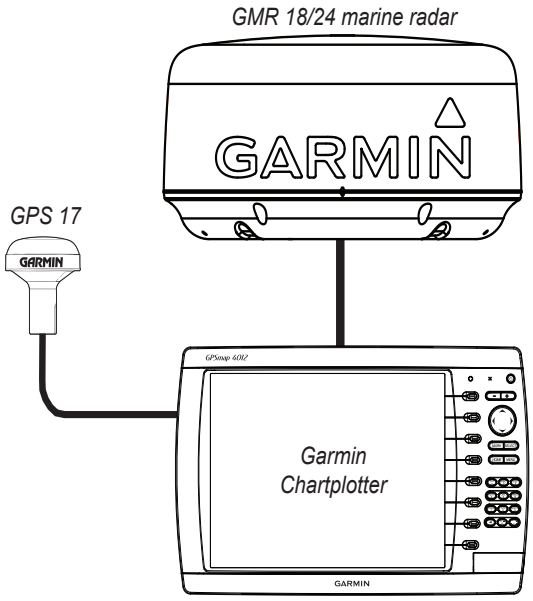
Making the final wiring connections

1. Connect the Black ground (-) wire to the vessel's negative power terminal.
2. Connect the Red power (+) wire (with fuse holder) to the vessel's positive power terminal.

WARNING: Do not cut the fuse holder from the red wire. The fuse holder must remain in place for the GMR 18/24 to function correctly. Removing the inline fuse holder may damage your boat's circuitry.

3. For a stand-alone network (chartplotter and radar only), attach the RJ-45 marine network cable to the RJ-45 socket on the back of the chartplotter. For an expanded network (chartplotter, radar, GMS 10, etc.), attach the RJ-45 marine network cable to an open RJ-45 socket on the GMS 10 network port expander. Tighten the RJ-45 locking ring clockwise until it is firmly sealed.

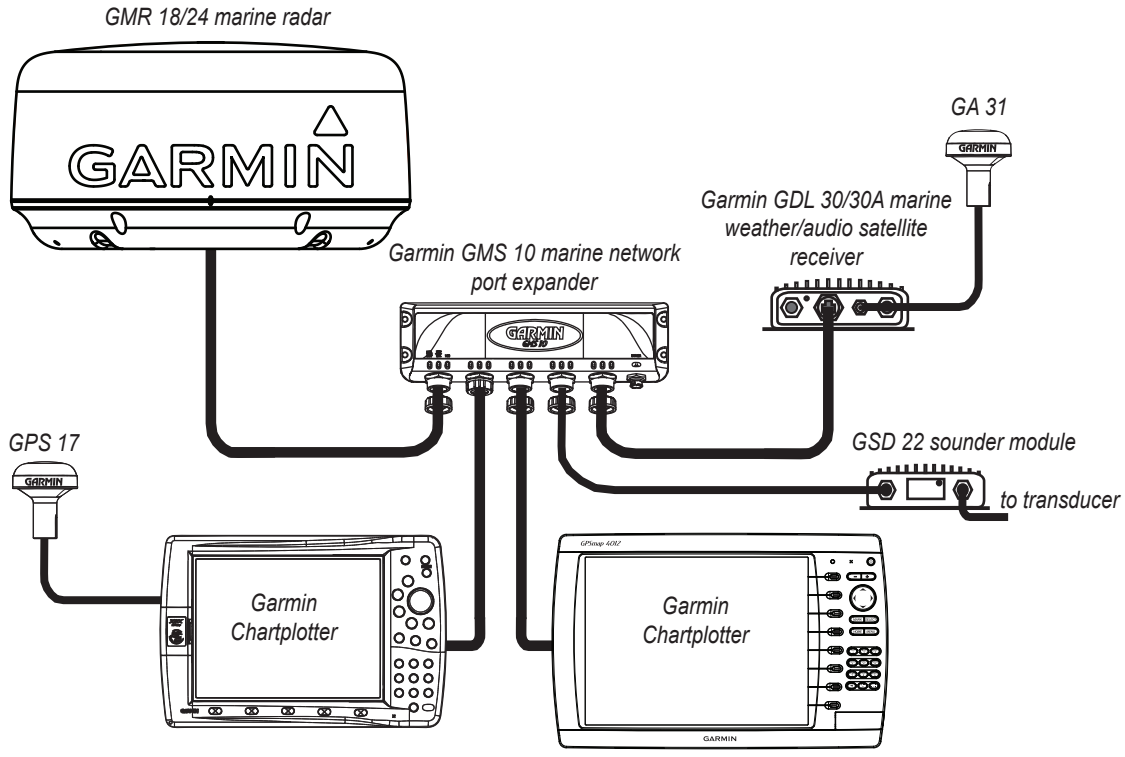
NOTE: If you are using a Garmin GPSMAP 4000 or 5000 series chartplotter, you may not need a GMS 10 network port expander. The GPSMAP 4000 and 5000 series chartplotters have multiple RJ-45 sockets.



Stand-alone Network

NOTE: When using the GMR 18/24 with a stand-alone network, the chartplotter and GPS antenna (GPS 17) must be installed according to their installation instructions. This diagram only shows how a GMR 18/24 radar communicates with a stand-alone network and does not illustrate the full wiring needs of the chartplotter or GPS 17.

NOTE: Both the GMR 18/24 and Garmin chartplotter must be connected to a power source according to their installation instructions. This diagram only illustrates the network data connections.



Expanded Network

NOTE: When using the GMR 18/24 with an expanded network, each network component must be installed according to its installation instructions. This diagram only shows how a GMR 18/24 radar communicates with an expanded network, and does not show the full wiring needs of the other network components.

NOTE: The GMR 18/24, Garmin chartplotter, and the other network components must be connected to a power source according to their installation instructions. This diagram only illustrates the network data connections.

Front of Boat Offset

Depending on the scanner installation, it may be necessary to adjust the Front of Boat Offset. If the scanner installation requires a 180° offset, change the Front of Boat Offset to 180° and test the radar. If the Front of Boat Offset needs further adjustment, continue with the procedure below.

Using the bow of the ship, take an optical bearing of a stationary target located within viewable range. Measure the target bearing on the radar. If the bearing deviation is more than +/- 1°, then do the following to access the Front of Boat Offset from the menu on your chartplotter:

Front of Boat Offest on a 3000 Series chartplotter:

1. From the Radar Page, press the **ADJ** key to display the Adjustment Menu.
2. From the Adjustment Menu, select **Setup,** and press **ENTER**. Using the **Rocker**, select the **Advanced** tab.
3. Using the **ROCKER**, highlight the **Front of Boat Offset** slider, and press **ENTER**.
4. Adjust the Front of Boat Offset.

Front of Boat Offset on a 4000/5000 Series chartplotter:

1. From the Home screen, select **Radar** > **Radar Setup** > **Advanced** > **Front Of Boat**.
2. Adjust the Front of Boat Offset.

Using the Radar

All functions of the GMR 18/24 radar are controlled using your Garmin marine network chartplotter. See the Radar section of your chartplotter's manual for operating instructions. If your chartplotter's manual does not contain a Radar section, download the latest revision of the manual from http://www.garmin.com/support/userManual.jsp

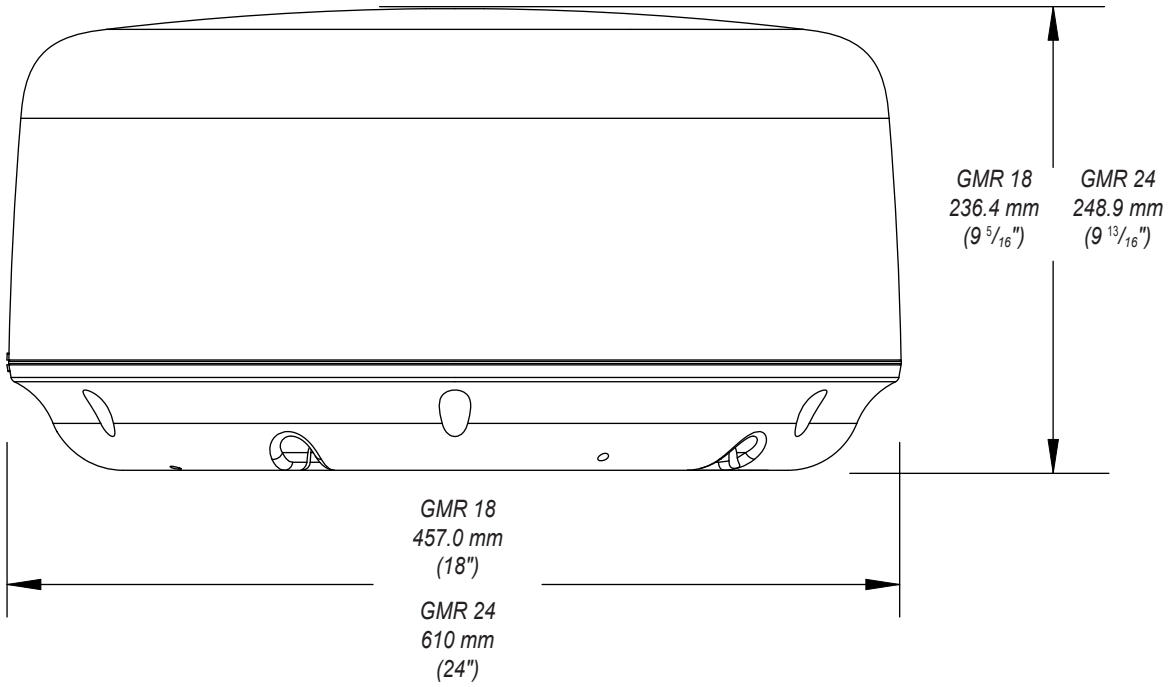
Specifications

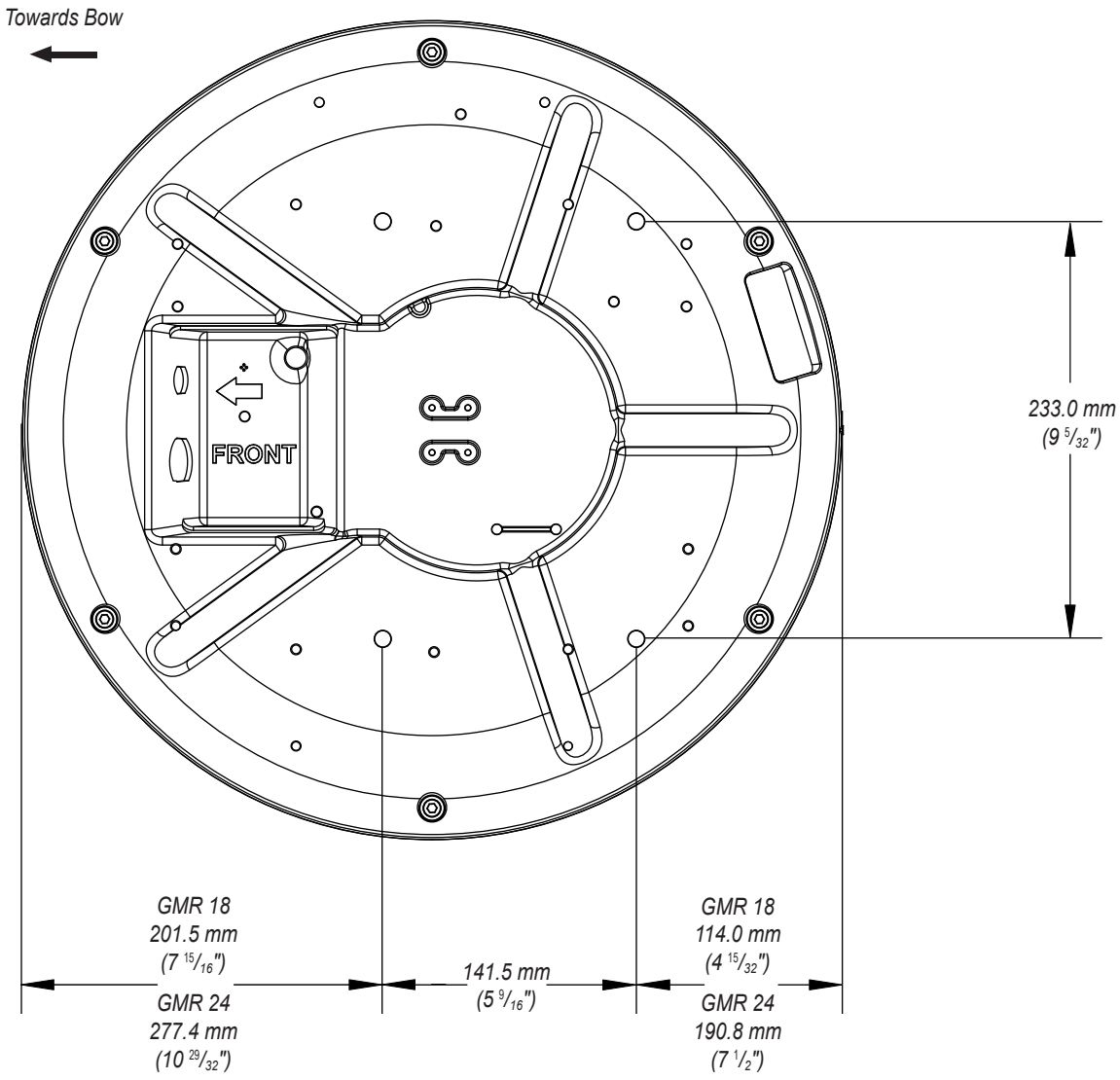
GMR 18

Unit Dimensions:	457 mm (18") D x 236.40 mm (9 $^{5}/_{16}$") H
Radar Scanner Weight:	Unit 7.17 kg (15.8 lbs); cable 3.81 kg (8.4 lbs)
Range Scales:	1/8 nm (with 1/32 nm range rings) to 36 nm (with 9 nm range rings)
Power Output:	4 kW
Power Input Source:	10.5-35 VDC 33.5 W
Operating Temperature Range:	-15° C (5° F) to 60° C (140° F), and a relative humidity up to 95% at 35° C (95° F)
Beamwidth:	Horizontal beamwidth of 5° nominal / Vertical beamwidth of 25° nominal
Range:	66.67 km (36 nm)
Wind Velocity:	Wind speed up to 100 Kts
Antenna RPMs:	24 or 30 rpm
Range Ring Accuracy:	20m or ± 1.5% of range scale, whichever is greater
Minimum Range:	20 meters (65 feet)
Range Discrimination:	20 meters (65 feet)
RF Transmit Frequency:	9410 ± 30 MHz

GMR 24

Unit Dimensions:	610 mm (24") D x 248.9 mm (9 $^{13}/_{16}$") H
Radar Scanner Weight:	Unit 9.12 kg (20.1 lbs); cable 3.81 kg (8.4 lbs)
Range Scales:	1/8 nm (with 1/32 nm range rings) to 48 nm (with 12 nm range rings)
Power Output:	4 kW
Power Input Source:	10.5-35 VDC 33.5 W
Operating Temperature Range:	-15° C (5° F) to 60° C (140° F), and a relative humidity up to 95% at 35° C (95° F)
Beamwidth:	Horizontal beamwidth of 3.6° nominal / Vertical beamwidth of 25° nominal
Range:	88.89km (48 nm)
Wind Velocity:	Wind speed up to 100 Kts
Antenna RPMs:	24 or 30 rpm
Range Ring Accuracy:	20m or ± 1.5% of range scale, whichever is greater
Minimum Range:	20 meters (65 feet)
Range Discrimination:	20 meters (65 feet)
RF Transmit Frequency:	9410 ± 30 MHz


GMR 18
236.4 mm
(9 5/16")
GMR 24
248.9 mm
(9 13/16")
GMR 18
457.0 mm
(18")
GMR 24
610 mm
(24")


Towards Bow
FRONT
233.0 mm
(9 5/32")
GMR 18
201.5 mm
(7 15/16")
GMR 24
277.4 mm
(10 29/32")
141.5 mm
(5 9/16")
GMR 18
114.0 mm
(4 15/32")
GMR 24
190.8 mm
(7 1/2")

Warnings

Failure to avoid the following potentially hazardous situations could result in an accident or collision resulting in death or serious injury.

- The radar scanner transmits electromagnetic energy. Ensure that the scanner has been installed according to the recommendations given in this guide, and that all personnel are clear of the scanner before switching to transmit mode.
- When navigating, carefully compare information displayed on the unit to all available navigation sources, including information from visual sightings, and maps. For safety, always resolve any discrepancies or questions before continuing navigation.
- Use the electronic chart in the unit only to facilitate, not to replace, the use of authorized government charts. Official government charts and notices to mariners contain all information needed to navigate safely.
- Use this unit only as a navigational aid. Do not attempt to use the unit for any purpose requiring precise measurement of direction, distance, location, or topography.

WARNING: This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This Notice is provided in accordance with California's Proposition 65. See www.garmin.com/prop65 for more information.

WARNING: Do not cut the fuse holder from the red wire. The fuse holder must remain in place for the GMR 18/24 to function correctly. Removing the inline fuse holder may damage your boat's circuitry.

FCC Compliance

The GMR 18/24 complies with Part 80 of the FCC rules. It has received a grant of equipment authorization, issued under the authority of the FCC.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Compliance

The Garmin 18/24 Marine Radar complies with Industry Canada Standard RSS-138.

Declaration of Conformity (DoC)

Hereby, Garmin, declares that this GMR 18/24 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

To view the full Declaration of Conformity, see the Garmin Web site for your Garmin product: www.garmin.com/products/gmr18/. Click **Manuals**, and then select the **Declaration of Conformity** link.

Software License Agreement

BY USING THE GMR 18/24, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY.

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Limited Warranty

All Garmin marine radomes and open array scanners are warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, Garmin will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alteration or repairs.

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To obtain warranty service, contact your local Garmin authorized dealer or call Garmin Product Support for shipping instructions and an RMA tracking number. Securely pack the unit and a copy of the original sales receipt, which is required as the proof of purchase for warranty repairs. Write the tracking number clearly on the outside of the package. Send the unit, freight charges prepaid, to any Garmin warranty service station.

Online Auction Purchases: Products sold through online auctions are not eligible for rebates or other special offers from Garmin. Online auction confirmations are not accepted for warranty verification. To obtain warranty service, an original or copy of the sales receipt from the original retailer is required. Garmin will not replace missing components from any package purchased through an online auction.

International Purchases: A separate warranty is provided by international distributors for units purchased outside the United States. This warranty is provided by the local in-country distributor and this distributor provides local service for your unit. Distributor warranties are only valid in the area of intended distribution. Units purchased in the United States or Canada must be returned to the Garmin service center in the United Kingdom, the United States, Canada, or Taiwan for service.

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